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AGRICULTURE IN PAKISTAN

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UNITED STATES DEPARTMENT OF AGRICULTURE
Economic Research Service

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Washington, D. C. June 1965

SUMMARY

Pakistan occupies 2 provinces in the northwest and northeast corners of the Indian subcontinent, separated by 1,000 miles of India. The total area of the country is 365,366 square miles and at mid-1964 the population was estimated at 110.9 million.

The seasonal alternation of prevailing winds, the monsoons, is Pakistan's dominant climatic feature, and in very large measure determines the nature of its agriculture. Only 7 percent of East Pakistan's cultivated area is irrigated, compared with 67 percent for West Pakistan. Most of East Pakistan is literally submerged under water during the monsoon period.

East Pakistan is largely an alluvial plain, built by dozens of rivers and streams which for ages have flowed across the land depositing nutrients and layers of soil. There are 2 distinct agricultural regions--the relatively unimportant Chittagong Hill Tract and the vast plain area that comprises most of the province.

West Pakistan's topography is dominated by the Indus River and its tributaries, which supply water for the irrigation of most of the area under cultivation. The Indus Plain, a vast stretch of about 55 million acres, largely covers the eastern quarter. This area contains about 75 percent of the sown acreage and most of the province's population. Outside the irrigated Indus Plain much of West Pakistan is rough and barren.

Slightly more than one-fourth of Pakistan's land area is classified as arable. East Pakistan in 1957/58 had 61.4 percent of its area under cultivation compared with only 20.1 percent in West Pakistan. The major share, some 40 percent, of the cropped area in West Pakistan is in wheat. Some 85 percent of East Pakistan's cropped area is in rice.

Of the 11 million farms in Pakistan, 6.1 million are in East Pakistan and 4.9 million in West Pakistan. Owner-operated farms make up 52 percent of the total. Nearly three-fourths of the population is engaged in agriculture.

In general, cultivation and harvesting methods are quite primitive. Technology is largely confined to expanding irrigation, using more fertilizers and improved seeds, plant protection, and improving hand tools.

Pakistan produces a wide variety of tropical, subtropical, and temperate zone crops for subsistence and commercial use. Production of subsistence crops--principally rice, wheat, other cereals and pulses--falls short of domestic requirements. Pakistan produces a surplus, however, of commercial crops which bring in most of the foreign exchange earnings. By far the principal export crop is jute. Other important crops are cotton, tea, and oilseeds.

Pakistan has a substantial livestock population, mainly bovines. In general, the quality of most animals is rather low. Nevertheless, the country is noted for the outstanding qualities of some of its animals, particularly certain breeds of cattle and horses. Limited availability, low incomes, and religious and other taboos restrict consumption of livestock products.

Pakistan's principal agricultural production policy goals are: self-sufficiency in output of food grains for the rapidly growing population, and expanded outturn of raw materials for the

growing domestic industry and for export. Specific goals are detailed in the Second Five Year Plan for economic development, in which agriculture is given high priority.

To meet the foreign exchange costs of agricultural and economic development under the Five Year Plan, Pakistan supplements its limited foreign exchange earnings by seeking foreign aid. In 1962/63 such aid constituted 42 percent of the central Government's budget.

The United States has provided the largest amount of aid to Pakistan's economic development, most of it either in grants or loans on easy payment terms. Of the total $1.8 billion from foreign sources for the first 4 years of the Second Five Year Plan, the U.S. share was slightly more than 50 percent. Since the enactment of Public Law 480 (Agricultural Trade Development and Assistance Act of 1954), the United States has committed under it $1 billion to Pakistan, through sales of surplus agricultural commodities.

Pakistan regulates foreign trade by means of licenses, quotas, and tariffs. Export duties on jute and cotton have been used for revenue, but they are being gradually reduced to keep these commodities competitive in world markets.

Export trade is predominantly in agricultural commodities or products manufactured therefrom--jute and cotton and their related products making up the bulk.

Agricultural commodities accounted for 19 percent of all imports in 1962/63; the major items were wheat, fats, and oils. The United States is the principal supplier of wheat, provided under P.L. 480.

Agricultural commodities accounted for 43 percent of all U.S. exports to Pakistan for calendar year 1963, the major one being wheat. Most agricultural exports to Pakistan go under P.L. 480.

Agricultural imports accounted for 50 percent of U.S. imports from Pakistan in 1963--the major ones being wool and jute.

The outlook over the next decade is for a fairly rapid rate of economic growth in Pakistan. Nevertheless, farm output is unlikely to expand at a sufficiently rapid rate to achieve the goal of self sufficiency in foods, particularly in view of the explosive rate of population growth. Pakistan's import needs for foodgrains--on concessional terms--will probably continue to grow over the next several years.

AGRICULTURE IN PAKISTAN

By William F. Hall, International Agricultural Economist
Foreign Regional Analysis Division
Economic Research Service

THE PHYSICAL SETTING

Location and Area

Pakistan became an independent country in 1947 when the territory of British India was divided into 2 sovereign States--India and Pakistan. Pakistan occupies 2 provinces in the northwest and northeast corners of the Indian subcontinent, separated by 1,000 miles of India (fig. 1). The total area of the country is 365,366 square miles. In mid-1964 the population was estimated by the U.S. Agency for International Development at 110.9 million, 60.7 million in East Pakistan and 50.2 million in West Pakistan (table 1). West Pakistan has an area of 310,239 square miles, and includes the following subdivisions: Kalat, Karachi, Hyderabad, Khairpur, Quetta, Multan, Bahawalpur, Lahore, Sargodha, D. I. Khan, Peshawar, Rawalpindi, Chitral, Kalam, Dir, Swat, and Amb. West Pakistan adjoins Iran and Afghanistan on the west and northwest, India on the southeast, and the Arabian Sea on the south. To the northeast, lies the disputed territory of Jammu-Kashmir.

East Pakistan has an area of 55,127 square miles and comprises the following subdivisions: Rajshahi, Khulna, Dacca, and Chittagong. It is bordered east, west, and north by India, east by Burma, and south by the Bay of Bengal.

Topography

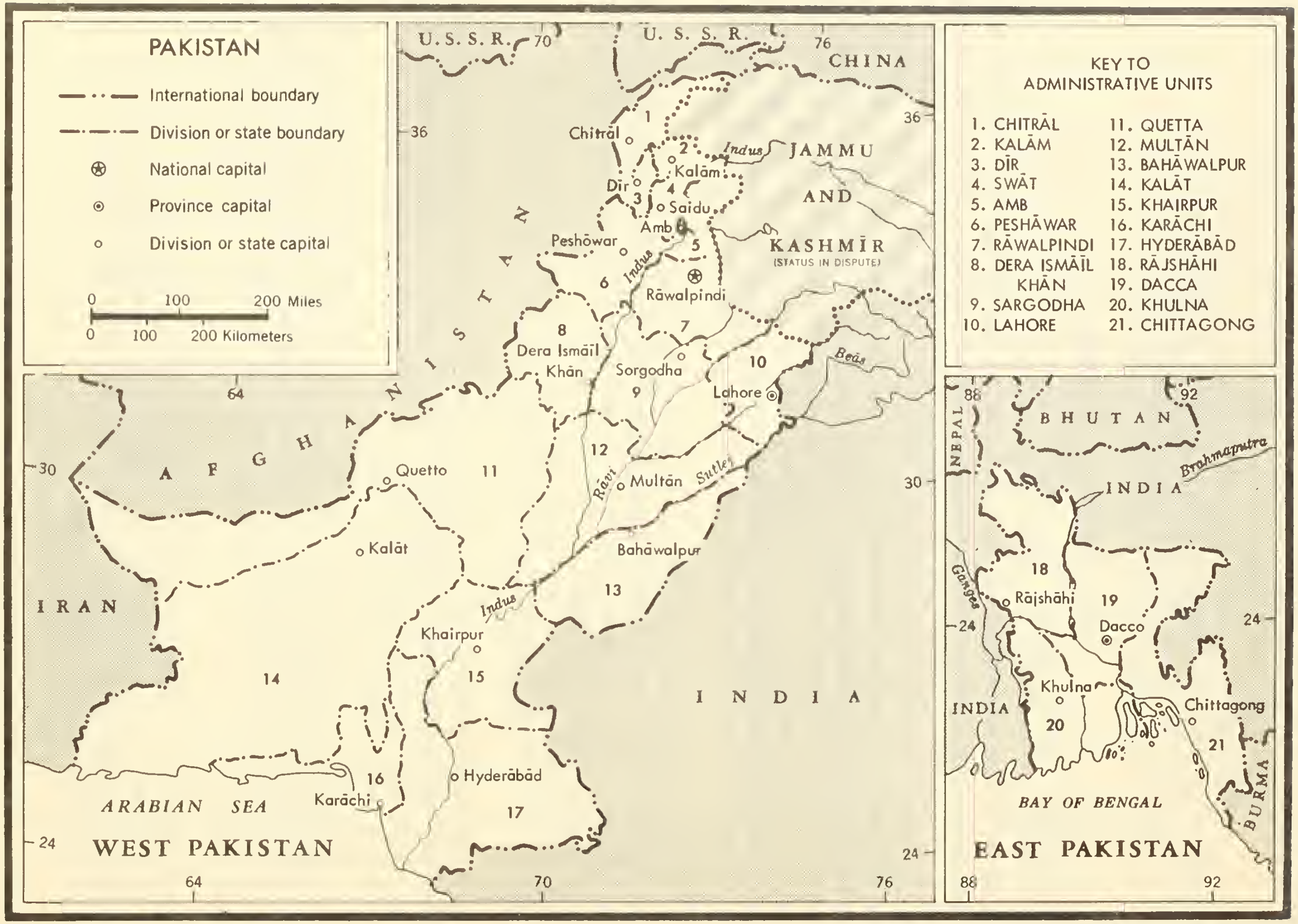
The Indus River enters West Pakistan from the northeast and flows south into the Arabian Sea. The Indus and its tributaries, the Sutlej, Beas, Ravi, Chenab, and Jhelum supply water for the irrigation of most of the Indus Plain. This Plain, which lies predominantly on the east bank of the river, varies in width from 50 to 200 miles.

The Baluchistan Highlands to the west contain a series of mountain ranges that are offshoots of the Himalayas. West Pakistan has 2 other regions of lesser importance: the Coastal Plain, a narrow strip of land bordering the Arabian Sea, and the Karan Basin, situated west of the Baluchistan Highlands.

East Pakistan has 2 main land forms, the Ganges Delta, which lies just above sea level and covers most of the province, and the Chittagong Hills, averaging about 600 feet in elevation and extending about 200 miles along the Bay of Bengal. Much of the Ganges Delta is inundated during and following the heavy monsoon rains.

Climate

The seasonal alternation of prevailing winds, known as the monsoons, is Pakistan's dominant climatic feature and in very large measure determines the nature of its agriculture. The year may be divided into 4 seasons: hot weather season, southwest monsoon, retreating southwest monsoon, and dry winter season.



U.S. DEPARTMENT OF AGRICULTURE

NEG. ERS 3607-65 (4) ECONOMIC RESEARCH SERVICE

Figure 1

Table 1.--Pakistan: Population by province, 1953-64

Midyear	East Pakistan		West Pakistan		Total Pakistan	
	Population	Index	Population	Index	Population	Index
	Million	1953=100	Million	1953=100	Million	1953=100
1953........	47.6	100	38.7	100	86.3	100
1954........	48.4	102	39.5	102	87.9	102
1955........	49.3	104	40.3	104	89.6	104
1956........	50.2	105	41.4	107	91.6	106
1957........	51.2	108	42.4	110	93.6	108
1958........	52.3	110	43.4	112	95.7	111
1959........	53.3	112	45.7	118	97.8	113
1960........	54.5	---	---	---	100.2	116
1961........	56.0	118	46.7	121	102.7	119
1962........	57.4	121	48.0	124	105.4	122
1963........	59.0	124	49.1	127	108.1	125
1964........	60.7	128	50.2	130	110.9	129

Agency for International Development, Near East and South Asia, Trends in Production and Trade, Sept. 1964.

During the hot weather season, March to May in East Pakistan and April to June in West Pakistan, there is a slow continuous rise in the air temperature along the Himalayan foothills. As the air temperature increases, often reaching 120° F. over the plains of northwestern India and Pakistan, an air current is established which draws moisture-laden air masses from over the Bay of Bengal. As the air current moves overland and becomes heated further, its moisture-holding capacity increases; and after several months, the air overhanging the subcontinent is saturated.

In late May or early June the saturated air masses reach the slopes of the Himalayas, upsetting the atmospheric equilibrum between wind velocity, air pressure, and temperature that has been established during the preceding months. Rains begin in East Pakistan and Assam, India, and begin moving northwest, interrupted by short dry spells. Over much of West Pakistan, which is outside the influence of the southwest monsoon, temperatures continue to rise.

Temperatures gradually fall along the Himalayan foothills from the cooling effect of torrential rains, and the hot weather season passes. The southwest monsoon ends in August in West Pakistan and in September in East Pakistan. Although the monsoon is an annual phenomenon, there are some year-to-year differences in its beginning and ending dates due to variations in temperature. These variations of 1 or 2 weeks may lengthen or shorten the growing season, causing either a surplus or a shortage of water in both provinces. The retreating southwest monsoon is essentially a transitional period, culminating in the dry winter season.

Soils

East Pakistan soils can be roughly classified into 2 groups, the red soils of crystaline origin in the hills and the alluvial soils of the river valleys, which cover the main part of the province.

The outstanding differences, however, in the soils of various parts of East Pakistan lie in their physical texture rather than in their chemical composition. The southern half of the province is subjected to annual overflows, which leave heavy deposits of silt.

Compared with the older soils in the northern part, the alluvial soils in the south generally contain substantial quantities of lime, potash, and phosphorus. The soils of the hill regions are deficient in nitrogen, but contain considerable quantities of potash and phosphorus.

In West Pakistan most of the valley areas have alluvial soils. In the mountains, which are largely bare, the soils are lithosols, or shallow soils. Generally, the alluvial soils have been deposited too recently to have zonal characteristics. Near Karachi, however, some of the older alluvial fans and terraces could be considered as representing the Red Desert soils. In the higher valleys of the former Baluchistan, some of the soils are fairly representative of young Sierozens with a fairly distinct subsoil concentration of calcium carbonate. In the zones of higher rainfall in the northeastern part of Punjab are found reddish brown, reddish chestnut, lateritic, and podzolic soils.

In West Pakistan the alluvial soils are generally very good and most of the crops are grown on these soils. In general they are deep and adapted to irrigation. However, salinity and waterlogging are major and increasing problems on these irrigated soils. There are areas where the soil material is apparently loess (windborne soils), and others, as in the Thar Desert in the northern part of Sind, where there are mostly sand dunes.

Agricultural Regions

East Pakistan is largely an alluvial plain, built by dozens of rivers and streams which for ages have flowed across the land depositing nutrients and layers of soil. There are 2 distinct agricultural regions, the relatively unimportant Chittagong Hill Tract, and the vast plain area that comprises most of the province. The rain-fed plain can be divided into 3 farming areas: the Surma-Meghna Valley, the North Bengal Plains, and the Delta area and Sunderbans.

The eastern half of the Chittagong Hills Tract is largely a forest containing commercial hardwoods and abundant, dense bamboo stands, while the western half is mostly scrub. Cultivation is limited to river valleys with silt deposits and to old stream beds. Shifting cultivation is a common practice.

The Surma-Meghna Valley, in the northeast corner of the province, is a great depression, only 6 to 12 feet above sea level. Each year, from June to September when 75 percent of annual rainfall occurs, this depression fills with up to 15 feet of water. One crop predominates, a special deep-water variety of rice, accounting for 85 percent of the region's sown area. In years of normal rainfall it can grow faster than the rising water. After rice is harvested in November and December, most of the area is unused the rest of the agricultural year, except for small pockets of vegetables, pulses, and oilseeds.

The North Bengal Plains is the most productive area for its size in East Pakistan. It is an area of well-drained soils in the northwest corner of the province, bordered by the Ganges River on the south and the Brahamaputra River on the east. Almost all of the province's high quality jute, one-fourth of the rice, and half or more of the tobacco, pulses, sugarcane, and winter grains are produced there.

The Delta area covers most of the acreage between the Ganges and the Bay of Bengal. It is less productive than the North Bengal Plains or the Surma-Meghna Valley. Drainage is poor throughout the area. The leading crop is coconuts.

The Sunderbans rim most of the Indo-Pakistan subcontinent, but are most extensive where large rivers enter their deltas. Muddy alluvial soils carried from the highland in the north are continually creating new land where the rivers empty into the sea. These lands, after a time, are then covered by a dense tidal and mangrove swamp called Sunderbans. As the land level rises and the soil becomes stabilized, new associations of trees and plants take over. It is this process, working for ages, that has created a large portion of East Pakistan.

West Pakistan can be separated into 4 agricultural regions, the Indus Plain, the submontane region, the hill catchment area, and the range lands.

The Indus Plain, a vast stretch of about 55 million acres, largely covers the eastern quarter of the province, from the Himalayan foothills in the north almost to the Arabian Sea in the south. This area contains about 75 percent of the sown acreage of West Pakistan and most of its population. The Indus River and its tributaries that flow through this area provide almost all of the water for Pakistan's irrigated acreage. The cropping pattern, for the most part, is similar throughout the region.

Population pressure has extended cultivation northward from the plains to the submontane region and mountain slopes of 5,000 to 8,000 feet elevation, sandwiched between the Indus plain and the Himalayas. Erosion caused by poorly constructed terraces and embankments, burning of forest cover, and overgrazing of the slopes has modified in various degrees almost all of this region. The uncontrolled runoff from these lands causes floods almost every year in the irrigated plains below.

The hill catchment area on the northwest, commonly called the Northwestern Frontier, with elevations between 9,000 and 12,000 feet, is largely a series of razor backed ridges. Soil erosion is widespread. Cultivation is limited to the narrow, steep-sided valleys. Here, numerous swift mountain waddies (streams that are dry except in the short rainy season) are dammed and narrow fields are fed by offtakes from these.

Most of the area immediately east and west of the irrigated parts of the Indus Plain and large portions of the hill submontane region are used for grazing only. These areas comprise over half of the entire land in West Pakistan. The erratic and uncertain rainfall, varying from 5 to 20 inches per year, furnishes poor and unreliable grazing for a livestock economy. Nevertheless, much of the nation's livestock products originate here. Most of the irrigated land in the plain would revert to this type of range land, which has been grazed for centuries, were it not for the immense canal system.

RESOURCE USE

Land

Slightly over one-fourth of Pakistan's land area is classified as arable, excluding tree crops and forests (table 2). According to the latest available statistics on the subject, the arable area in 1957/58 totaled 61.5 million acres, with 64.8 percent in West Pakistan, and 35.2 percent in East Pakistan. For the decade 1947/48-1957/58 there was an addition of 3.3 million arable acres.

Table 2.--Pakistan: Land use by province 1947/48, 1951/52, and 1957/58

Land use	West Pakistan			East Pakistan			All Pakistan			Percentage distribution	
	1947/48	1951/52	1957/58	1947/48	1951/52	1957/58	1947/48	1951/52	1957/58	1947/48	1957/58
	- - - - - - - -	- - - - - -	1,000 Acres	- - - - - -	- - - - - -	- - - - - -	- - - - - -	- - - - - -	- - - - - -	- -Percent	- -
Reported area											
Arable											
Current fallow	9,903	9,438	9,010	2,601	1,692	1,346	12,504	11,130	10,356	5.4	4.4
Net area sown.	26,395	27,907	30,878	19,328	20,542	20,306	45,723	48,449	51,184	19.6	21.9
Area sown more than once ..	(2,355)	(2,333)	(3,405)	(5,870)	(5,707)	(5,621)	(8,225)	(8,040)	(9,026)	(3.5)	(3.9)
Total	36,298	37,345	39,888	21,929	22,234	21,652	58,227	59,579	61,540	25.0	26.3
Other											
Forests	3,395	3,462	3,174	2,982	3,151	5,464	6,377	6,613	8,638	2.7	3.7
Not available for cultivation	51,472	50,814	50,341	5,350	4,761	5,598	56,822	55,575	55,939	24.3	23.9
Other uncultivated 1/ ...	22,687	23,129	21,657	4,288	4,504	1,936	26,975	27,633	23,593	11.5	10.1
Total ...	113,852	114,750	115,060	34,549	34,650	34,650	148,401	149,400	149,710	63.5	64.0
Unreported area ..	84,801	83,903	83,493	632	631	631	85,433	85,534	84,124	36.5	36.0
Total acreage	198,653	198,653	198,553	35,281	35,281	35,281	233,934	233,934	233,934	100.0	100.0

1/ Excluding current fallow

Government of Pakistan, Agricultural Economics and Statistics. Land and Crop Statistics of Pakistan, June 1962.

East Pakistan in 1957/58 had 61.4 percent of its total land area under cultivation compared with only 20.1 percent for West Pakistan. High rainfall permits, and pressure of population requires, that the land in East Pakistan be intensively used. On the other hand, West Pakistan lies in the arid belt of the world and land use is mainly dependent on irrigation. Tracts of uncultivable land can be expected to be brought under cultivation when irrigation facilities are further developed and when a solution is found for the problems of waterlogging and salinity that now keep 3 million acres out of production and affect to varying degrees an additional 12 million acres.

The major share, some 40 percent, of the cropped area in West Pakistan was in wheat in 1962/63. The next most important single crop was cotton, which accounted for 11 percent of the cropped area. All cereals and pulses accounted for 80 percent of the 1962/63 cropped area.

For the crop year 1962/63, 84 percent of East Pakistan's cropped area was in paddy rice, 7 percent in jute, and 9 percent in all other crops.

According to the 1960 census, the number of agricultural holdings in Pakistan totaled 12.2 million--1.2 million classified as livestock holdings not associated with land and 11 million farms associated with land of which 6.1 million were in East Pakistan and 4.9 million in West Pakistan (table 3).

Table 3.--Pakistan: Number and percentage distribution of farms, by tenure status, 1960

Category	West Pakistan	East Pakistan	Pakistan total
		Number	
Owner-operated	1,997,736	3,731,110	5,728,846
Owner-cum-tenant-operated 1/	834,257	2,308,330	3,142,587
Tenant-operated 2/	2,027,990	100,040	2,128,030
Total	4,859,983	6,139,480	10,999,463
		Percentage distribution	
Owner-operated	41	61	52
Owner-cum-tenant-operated	17	37	30
Tenant-operated	42	2	18
Total	100	100	100

1/ Operated by farmer who owns part and holds rest as tenant.
2/ Operated by farmer who is not owner, and pays fixed rent in cash or kind or a share of the produce.

Government of Pakistan, 1960 Pakistan Census of Agriculture, Vol. III, All Pakistan Report 1, Mar. 1964, pp. 34 and 66.

Owner-operated farms make up 52 percent of the total. Owner-cum-tenant farms (operated by farmers owning part and holding rest as tenants) constitute 30 percent of those reported in the 1960 Census. Only 18 percent of all farms were classified as tenant-operated.

The Government of Pakistan, at the time of partition from India in 1947 was faced with a vast conglomerate of land tenure systems. The uncertainty of the rights and duties of tenants and landlords and the insecurity of tenure had a depressing effect on agricultural productivity. Since then the Government has been attempting to establish uniform legal rights and relationships.

Fragmentation of holdings is another hindrance to agricultural productivity. According to the 1960 census, of the 4.9 million farms in West Pakistan some 2.9 million were fragmented to some degree. In East Pakistan, some 5.5 million farms out of 6.1 million were fragmented to some degree. In all Pakistan, 77 percent of the farms were fragmented to some degree. Of the fragmented farms, 26 percent reported 2 to 3 fragments, 15 percent, 4 to 5 fragments, 17 percent, 6 to 9 fragments, and 19 percent, 10 or more fragments. Only limited progress has been made in overcoming this problem; but attempts are now being made. Land Commissions in both wings of the country are now reviewing the entire field of land utilization and tenure.

Water

In East Pakistan only 7 percent of the cultivated area is irrigated, since most of the Province is literally submerged with water during the monsoon period.

West Pakistan's agricultural production largely depends upon irrigation. The 1960 census reported 36.2 million acres of cultivated farmland, of which 24.3 million were irrigated.

Most of the irrigated acreage of West Pakistan is located on the 86,000 square mile Indus River Plain. The Plain's length is more than 700 miles; its width varies from 200 miles in the former state of Punjab to about 50 miles in the narrow neck between the Thar Desert and the Sulaiman Mountains.

Five major rivers cross the Plain in West Pakistan. Going from west to east, they are the Indus, the Jhelum, the Chenab, the Ravi, and the Sutlej. The Indus is by far the largest and the others are tributaries to it. The areas between these rivers, called doabs, are supplied water diverted from the rivers by canals. This Indus system supports about 40 million Pakistanis and 10 million Indians.

When Pakistan and India were partitioned in 1947, the Indus system was divided between the 2 countries; for 13 years thereafter the distribution of its waters was a matter of bitter dispute. The Indus Water Treaty of 1960, mediated by the World Bank, ended the long dispute. This treaty provides for a $1 billion program for the development of agriculture and hydroelectric power in the Indus system. This program is being financed by a separately administered fund contributed to by Pakistan, India, international finance agencies, and foreign countries interested in the subcontinent's development. The United States is the major contributor.

The main purpose of the Treaty is to divide the waters of the Indus River and its 5 tributaries in Pakistan and India between the 2 countries. Those areas of Pakistan that presently receive irrigation water from the 3 eastern rivers of the Indus system will, upon completion of the 10-year Indus Basin development plan, receive their irrigation water from the Indus River and the 2 western tributaries. The entire flow of the 3 eastern tributaries (20 percent of the yearly flow of the Indus System) will be released for use in India.

The main works to be constructed in Pakistan are the following: (1) Four hundred miles of canals that will carry water from the western rivers to the areas in Pakistan formerly irrigated by the eastern rivers, (2) 2 storage dams, both near the northeastern border of Pakistan on the Jhelum and Indus Rivers (combined storage capacity will be 9 million acre-feet or 5 percent of the total flow of the rivers), (3) generation facilities for 900,000 kilowatts of electricity, (4) remodeling of present barrages and canals, (5) surface and subsurface drainage channels, and (6) 2,500 tube wells to overcome salinity and waterlogging on 2.5 million acres.

Waterlogging and salinity are estimated to have taken out of cultivation 3 million acres in West Pakistan. Tentative estimates have been made that 50,000 to 100,000 acres scattered in patches all over the Province, are going out of use annually, and it is feared that the rate is accelerating. The spreading of this menace exceeds any measures yet undertaken to arrest it. From the national point of view, it is probably the most serious technical problem facing the country. From the farmer's point of view, it is a creeping anxiety, depressing his yields and casting doubt on the value of adopting any aids to increasing production.

The Pakistan Water and Power Development Authority, popularly known as WAPDA, was established in 1958 as a semi-autonomous body to undertake the unified and coordinated development of the water and power resources of both wings of the country. WAPDA is responsible for and is proceeding with investigations, planning, design, and construction of surface and groundwater development projects and thermal and hydroelectric power plants in both East and West Pakistan. Its responsibilities include implementation of the Indus Basin Project, the Government's salinity and waterlogging control projects in West Pakistan, and coastal embankment and flood control in East Pakistan.

Transportation

Railroads.--In Pakistan the railroads are government owned and are operated by an autonomous Railway Board. There are 5,330 route miles of rails in West Pakistan and 1,712 miles in East Pakistan. The West Pakistan system has been modernized under the country's economic development program. About 87 percent of the routes in West Pakistan are broad gage and the rest are evenly divided between meter- and narrow-gage rails. In East Pakistan, one-third of the routes are broad gage and two-thirds meter gage.

Inland Water Transport.--Water transportation in West Pakistan is negligible, but there are 3,000 miles of perennially passable routes in East Pakistan. This system expands to 4,500 miles during the monsoon period. There are 172 steam-propelled craft and 887 motor-power vessels with a capacity of about 100,000 passengers and about 160,000 metric tons of cargo. In addition there is a vast fleet of 300,000 unmechanized country boats with a passenger capacity of 1.4 million, and cargo capacity of 1.2 million metric tons.

Roads.--In 1962 total road mileage in Pakistan was placed at 63,953 route miles, of which 21,573 miles were in West Pakistan and 42,380 miles in East Pakistan. There are 9,672 miles of all-weather roads in West Pakistan, but only 900 miles in East Pakistan.

Ports.--Pakistan has 3 ports, Karachi in West Pakistan and Chittagong and Chalna in East Pakistan. Karachi has 21 berths, Chittagong is progressing to 17, and there are 5 at Chalna.

Port facilities are being improved and expanded under the Second Five Year Plan. The annual cargo tonnages handled at these 3 ports, both imports and exports, totals some 9 million metric tons, over half being handled at Karachi.

Aviation.--Pakistan's air transport system is becoming increasingly important. The aviation industry is controlled by the Directorate General of Civil Aviation, under the Ministry of Defense.

Manpower

Pakistan's 1961 census enumerated a total of 30.2 million workers over the age of 10 years. Some 74.3 percent were engaged in agriculture. About 85 percent of the East Pakistan and 60 percent of the West Pakistan labor force were in agriculture.

Unemployment and underemployment are widespread. The country has a chronic surplus of manpower and a critical scarcity of occupational skills needed for development projects.

The Second Five Year Plan seeks to provide employment opportunities for new entrants to the labor force and at the same time to reduce the backlog of unemployed.

Technology

In general, cultivation and harvesting methods are quite primitive. A wooden plow and a simple wooden drag are used, both drawn by oxen or camels. Most seed is broadcast by hand; seed planters, if used at all, are generally primitive. Harvesting is by hand--hand sickles being used in cutting grain and oilseed crops. Threshing is done by placing the grain stalks on the ground or floor and walking cattle over them. Grain is separated from the chaff by tossing it into the air for the wind to blow the chaff away. The average Pakistani farmer does not have either capital or know-how for modern farm machinery, and the fragmentation of the average farm makes uneconomic the use of power equipment. Also, a large labor force that is both underemployed and unemployed limits the amount of powered equipment that would be used.

For the time being, technology is largely confined to expanding irrigation, using more fertilizers and improved seeds, plant protection, and improved hand tools. The use of chemical fertilizers was practically unknown in Pakistan 15 years ago, except for small quantities used on the tea estates in East Pakistan. A little progress has been made since then, but during the 1961/62 crop season an average of only 3 pounds of chemical fertilizers per acre were consumed.

Currently, Pakistan has an annual productive capacity for approximately 125,000 metric tons of chemical fertilizers (nutrient basis). Three fertilizer plants are located in West Pakistan at Lyallpur, Daudkhel, and Multan, and one plant is located in East Pakistan at Fenchuganj.

Agricultural Productivity

An increase in agricultural productivity, both on a per man and per acre basis, is one of the most pressing needs of the country. During the 27-year period, 1937/64, the annual compound rate of increase in agricultural production was about 0.7 percent, while population increased at a compound rate of 1.7 percent. Agricultural performance for a shorter and more recent period shows Pakistan's agricultural output has outpaced the growth in population. Over the 10-year period, 1953-63, the compound rate of growth for agricultural output was 3.0 percent while the average annual rate of growth for the population was 2.3 percent. The 1964 index of agricultural production was 129 (1952-54=100), down 6 points from 1963 (table 4); per capita output was 100, down 8 points from the previous year's level.

Food Consumption

A food balance calculated for 1959-61 indicates that the average per capita daily calorie intake in Pakistan was 2,120 calories (table 5). Even though this calorie intake approximates the nutritional needs for persons living in South Asia as established by Food and Agriculture Organization, the diet is nutritionally inadequate. Cereals accounted for 73 percent of the calorie supply, and the protective foods--meat, milk, fruits and vegetables, and fats and oils--provided only 15 percent.

In all developing countries, a high proportion of income is spent for food. In Pakistan about 60 percent of the income goes for food, in India, an estimated 57 percent, and in Japan, about 36 percent.

CROPS

Pakistan produces a wide variety of tropical, subtropical, and temperate zone crops for subsistence and commercial use. Production of subsistence crops--principally rice, wheat, other cereals, and pulses--falls short of domestic requirements. Pakistan produces a surplus, however, of commercial crops which bring in most of the foreign exchange earnings. By far the principal export crop is jute. Other important crops include cotton, tea, and oilseeds.

Food Crops

Rice.--Pakistan produces 3 crops of rice annually: autumn, winter, and summer. East Pakistan accounts for 90 percent of the annual output. In that province, the autumn rice crop is sown from April to June and harvest takes place from July to September. The East Pakistan

Table 4.--Pakistan: Selected agricultural production indices, average 1952-54 and annual 1959-64

Category	Average 1952-54	1959	1960	1961	1962	1963	1964
Agricultural production	100	115	117	123	124	135	129
Per capita agricultural production	100	102	101	103	102	108	100
Food production	100	116	121	124	125	137	131
Per capita food production	100	103	104	104	102	110	102
Population index, (1953=86,300,000)	100	113	116	119	122	125	129

Economic Research Service, U.S. Department of Agriculture. Indices of Agricultural Production for the Far East and South Asia, Average 1952-54 and Annual 1959-64.

Table 5.--Pakistan: Calorie consumption per person per day, by source, compared with that in India and Ceylon, 1959-61

Source	Calories per day		
	Pakistan	India	Ceylon
	Number		
Cereal products	1,532	1,304	1,241
Starchy crops 1/	17	53	77
Sugar	134	168	225
Pulses 2/	109	271	305
Other fruits and vegetables	80	42	46
Fats and oils 3/	85	87	101
Meat, fish, and eggs	60	18	84
Milk and cheese	99	114	39
Total 4/	2,120	2,060	2,120

1/ Potatoes, sweetpotatoes, yams, and cassava; includes bananas in India.
2/ Includes nuts and cocoa.
3/ Includes butter and ghee.
4/ Rounded to the nearest 10 calories.

Economic Research Service, U.S. Department of Agriculture. Food Balances for 12 Countries in the Far East and Oceania, 1959-61.

winter rice is sown from July to September and harvested between November and February. East Pakistan's summer rice crop is sown during November and December and harvested from March to May. West Pakistan's rice is sown from June to August and harvested between September and November. Pakistan's paddy rice production in 1963 was 17.7 million metric tons from 25.4 million acres. Although the acreage and production for 1964 are not available, incomplete official estimates indicate that they will exceed the 1963 record (tables 6 and 7).

Wheat.--Practically all of Pakistan's wheat comes from the Punjab area of West Pakistan. The West Pakistan wheat crop is sown from October to December and is harvested during April and May. Wheat production for 1963 and 1964 was 4.2 million tons in each year, from 12.6 and 12.2 million acres respectively.

Barley.--In 1963, 83 percent of Pakistan's barley was produced in West Pakistan. Production that year was 145,000 metric tons from 561,000 acres. The 1964 production is placed at 124,000 metric tons from 495,000 acres. In West Pakistan, barley is sown in October and November and is harvested in April of the following year. The sowing and harvesting periods are roughly the same for East Pakistan.

Corn.--West Pakistan accounts for most of the corn grown in the country. In 1963, total output was 530,000 metric tons from 1.2 million acres, and in 1964, some 533,000 metric tons from 1.3 million acres. In West Pakistan corn is sown from March to April. It is harvested in May for use as fodder and in September for grain.

Table 6.--Pakistan: Agricultural production by crops, average 1952-54, annual 1954-64 1/

Crop	1952-54	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964 2/
	1,000 metric tons											
Rice, rough	13,078	12,837	11,002	13,753	12,905	12,046	14,432	16,068	16,132	14,962	17,739	18,000
Wheat	3,043	3,669	3,213	3,393	3,662	3,587	3,932	3,938	3,847	4,129	4,215	4,166
Barley	124	145	124	145	132	172	175	151	137	134	145	124
Corn	400	435	460	471	449	490	488	446	444	494	530	533
Bajra (millet)	364	354	345	369	278	314	329	306	370	423	362	356
Jowar (sorghum)	247	224	253	259	186	215	233	222	249	252	339	340
Gram (chickpeas)	494	625	667	744	728	699	616	637	646	657	712	732
Other pulses	485	517	536	455	424	396	441	416	829	593	506	509
Sugarcane	10,973	12,988	12,680	12,314	13,022	14,312	16,414	15,031	15,660	22,181	23,265	22,265
Peanuts, unshelled	1	3	13	20	19	20	39	32	29	29	27	30
Sesame	37	37	37	34	28	35	35	32	37	34	34	35
Flaxseed	13	15	14	13	12	5	15	15	13	12	15	14
Rape and mustard	267	274	339	340	314	300	382	321	318	310	363	302
Cottonseed	622	603	668	648	630	585	631	647	674	782	897	833
Jute	967	845	1,180	1,001	1,125	1,088	1,008	809	1,264	1,143	1,008	1,060
Cotton	293	284	314	307	306	275	295	304	328	368	422	392
Tobacco	82	88	127	89	87	91	101	89	86	102	102	103
Tea	23	24	24	24	20	24	25	19	26	24	25	25

1/ Calendar years.

Table 7.--Pakistan: Acreage of principal crops, 1954-64 1/

Crop	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964 2/
	1,000 acres										
Rice, rough	23,705	21,881	22,456	22,887	22,487	24,125	24,804	23,964	24,414	25,437	26,500
Wheat	10,514	10,633	11,266	11,720	11,495	12,032	12,193	11,603	12,571	12,592	12,200
Barley	602	536	539	525	542	550	630	536	544	561	495
Corn	1,071	1,070	1,071	1,072	1,132	1,199	1,207	1,191	1,150	1,249	1,250
Bajra (millet)	2,192	2,203	2,288	1,846	2,003	1,990	1,844	2,055	2,104	1,831	1,800
Jowar (sorghum)	1,126	1,327	1,358	955	1,097	1,128	1,177	1,269	1,204	1,156	1,200
Gram (chickpeas)	2,764	3,262	3,423	3,327	3,134	3,154	2,954	2,881	3,080	3,151	3,180
Other pulses	3/	3/	3/	3/	3/	3/	3/	3/	3/	3/	3/
Sugarcane	979	1,017	967	1,043	1,234	1,301	1,261	1,238	1,630	1,630	1,528
Peanuts, shelled	10	14	21	25	36	51	58	57	53	58	60
Sesame	212	211	214	188	206	217	211	250	205	194	195
Flaxseed	82	76	75	69	31	93	90	61	60	73	72
Rape and mustard	1,609	1,879	2,081	1,769	1,739	2,065	2,000	1,791	1,704	1,798	1,673
Jute	1,243	1,634	1,230	1,563	1,528	1,375	1,518	2,061	1,723	1,700	1,650
Cotton	3,185	3,529	3,607	3,641	3,305	3,370	3,242	3,488	3,435	3,670	3,670
Tobacco	191	242	191	181	196	200	205	198	220	219	222
Tea	74	77	76	76	76	78	78	79	81	84	85
Total	49,559	49,591	50,863	50,887	50,241	52,928	53,472	52,722	54,178	55,403	55,780

1/ Calendar years. 2/ Preliminary. 3/ Not available.

Compiled from official Pakistan statistics and reports of Foreign Agricultural Service, U. S. Dept. Agr.

Bajra (Millet).--East Pakistan produced less than 500 metric tons of bajra. The West Pakistan bajra crop is sown during June and July and is harvested September through November. Pakistan produced 362,000 and 356,000 metric tons of bajra during 1963 and 1964, respectively. In East Pakistan, bajra is sown in April and harvested in July and August.

Jowar (Sorghum).--In 1963 and 1964 Pakistan produced 339,000 metric tons and 340,000 metric tons, respectively, on 1.2 million acres each year. Practically all was grown in West Pakistan since East Pakistan produces only around 1,000 to 2,000 metric tons annually. Jowar for food is sown during March to August and harvested September to November. Jowar for fodder is sown in June and July and harvested September to November.

Gram (Chickpeas).--West Pakistan produces about 95 percent of Pakistan's annual gram output. There, the crop is sown September to November and harvested in April. In East Pakistan, gram is sown in October and harvested February to March. Pakistan produced 732,000 metric tons in 1964 on 3.2 million acres.

Other pulses.--Pakistan produced 509,000 metric tons of miscellaneous pulses in 1964. East Pakistan accounts for about 40 percent of the annual output. In that Province pulses are sown June and July and harvested February to April. In West Pakistan sowing takes place April to June and harvest, January to March.

Sugarcane.--Pakistan's sugarcane output has been rising in recent years. Out of 23.3 million metric tons produced in 1963, West Pakistan accounted for 79 percent. Sugarcane is planted March to April in West Pakistan and harvested October to March. In East Pakistan cane is planted November to February and harvested October to March.

Sesame.--Pakistan's production of sesame has remained relatively static in recent years. In 1964 some 35,000 metric tons were produced. Most of the sesame is grown in East Pakistan where it is sown twice a year--the first crop in February and March for harvest in September and October, the second, in August to October for harvest in November to January. West Pakistan produces only one sesame crop, sown in June and July and harvested in October and November.

Rape and Mustard.--Pakistan produced 302,000 metric tons of rape and mustard seed in 1964. West Pakistan accounted for some 70 percent of the crop. In West Pakistan, rape and mustard seed are planted in October and November and harvested in March and April. In East Pakistan, they are sown September to November and harvested in February and March.

Cottonseed.--Virtually all of the cotton crop is produced in West Pakistan. Cottonseed production in 1964 amounted to 833,000 metric tons.

Vegetables and Fruits.--Pakistan produces a wide variety of fruits and vegetables. Recent data for these crops are not available, since they are not regularly reported by the Pakistan Ministry of Food and Agriculture.

Nonfood Crops

Jute.--Jute is by far the most important cash crop of Pakistan and the country's major source of foreign exchange earnings. All is produced in East Pakistan. Pakistan produced

1.1 million metric tons in 1964 and 1.0 million in 1963. The acreage was 1.7 million in 1964 and 1.7 million in 1963. The planting and harvesting of jute varies with the variety of plants and the altitude of the land. Sowing begins in February at the lower elevations and continues until June in the higher; harvesting begins in June and ends in December.

Tea.--Virtually all tea, which is perennial, is produced in East Pakistan. New seeds are generally sown November to March, and seedlings are transplanted after 6 months. Tea plucking commences about the end of March. The months of July, August, September, and the first half of October is the period of greatest production. Plucking ceases by the end of December. Pakistan produced 25,000 metric tons of tea in 1964 on 85,000 acres.

Cotton.--Cotton, the second most important cash crop, is grown in both East and West Pakistan. However, most of it is produced in West Pakistan where both Desi (indigenous) and acclimatized American varieties are grown. However, less than 10 percent of the area under cotton is seeded with Desi varieties and the rest, with American varieties. The crop is sown April to July and harvested September to December. What little is produced in East Pakistan is sown in May and June and harvested October to December. Production in 1964 totaled 392,000 metric tons from 3.7 million acres.

Tobacco.--Pakistan produced 102,000 and 103,000 metric tons of tobacco in 1963 and 1964, respectively, on 219,000 and 222,000 acres. West Pakistan produces most of the crop. Tobacco is sown January to March and harvested May to July.

Flaxseed.--East Pakistan accounts for the bulk of the flaxseed produced. In 1964 Pakistan produced 14,000 tons. It is sown in October and November and harvested in February and March in East Pakistan. In West Pakistan, flax is sown in October and November and harvested in March and April.

LIVESTOCK AND LIVESTOCK PRODUCTS

Pakistan has a substantial livestock population, mainly bovines (table 8). In general, the quality of most animals is rather low. Nevertheless, the country is noted for the outstanding qualities of certain breeds of its cattle and horses. The consumption of livestock products is restricted by limited availability, low incomes, and religious and other taboos.

Table 8.--Pakistan: Livestock numbers, 1960

Kind	West Pakistan	East Pakistan	Total
		1,000	
Cattle	14,570.2	18,960.6	33,530.8
Buffaloes	7,946.3	455.5	8,401.8
Sheep	9,786.4	476.8	10,263.2
Goats	7,260.9	5,659.7	12,920.6
Poultry	10,015.2	20,095.9	30,111.1

Government of Pakistan, 1960 Census of Agriculture, Vol. III, All Pakistan Report 1, Mar. 1964.

Milk is the most important livestock product consumed in Pakistan. Milk from both cows and buffaloes is widely used. However, most consumers prefer buffalo milk because of the high fat content, 6 to 8 percent. The principal products derived from milk are butter, clarified butter (ghee), cheese, sweetened boiled milk (khir), and curdled boiled milk (dahi). Ghee production is an important cottage industry and a good source of income to the poor farmer.

The people generally prefer goat meat to beef or mutton, except in the northwest frontier area, where mutton is preferred. Pork is consumed only in small quantities in East Pakistan.

Hides are an important byproduct of the livestock industry. Substantial quantities of raw hides and skins and small quantities of tanned and dressed leather are exported. About half of the domestic consumption of hides is for local-style shoes, one-fifth for western-style shoes, and the rest for waterbags, saddles, and other articles of industrial or agricultural use.

Bovines

Pakistan cattle, noted for their ability to withstand heat, are used primarily for plowing, threshing, irrigation, and transport. Secondarily, they are used for their milk, meat, and byproducts: manure, bones, and hides and skins. Much has been done in recent years to develop a dairy industry. The 1960 agricultural census enumerated cattle at 33.5 million head. There are 6 distinct breeds of cattle, Bhagnari, Dhanni, Lohani, Red Sindhi, Sahiwal, and Tharparkar. The bullocks of the first 3 breeds are good draft animals, but the cows yield only 4 to 5 kilograms of milk daily. The Red Sindhi and Sahiwal are dairy cattle while the Tharparkar is a dual-purpose animal.

Buffaloes are raised principally for their milk, but they are also used for draft and slaughtered for meat. The agricultural census of 1960 placed buffalo numbers at 8.4 million. Three breeds are raised: Kundi, Nili, and Ravi. They are ranked in the order of their production of milk per day, generally accepted as 7 kilograms, 10 kilograms, and 20 kilograms, respectively.

Sheep and Goats

The agricultural census of 1960 placed sheep numbers at 10.3 million. Ninety-five percent were in West Pakistan. The sheep flocks of Pakistan have a wide range of physical characteristics and there are at least 17 breeds. The nomadic movement of many flocks and illiteracy among shepherds are handicaps to improving management practices.

Goats are raised mainly for their milk and meat. In addition, goat skins are an important export commodity. Six main breeds of goats are found in the country: Barbari, Beetal, Chapar, Damani, Kaghani, and Kamori. The agricultural census of 1960 placed goat numbers at 12.9 million.

Other Livestock

In urban areas, horses are still widely used for pulling passenger vehicles. In rural areas, they are used as saddle and pack animals, but seldom for plowing and other agricultural operations. Donkeys are kept as beasts of burden or pack animals. Cheaper than other transport animals such as horses and oxen, they are more commonly used by the poorer classes, especially along the north western frontier. Mules are used as pack animals, particularly in the hilly and mountainous parts of the country. Camels are used chiefly as pack animals or for carting in urban areas. Transport by a combination of camels and modern vehicular equipment is practiced. Because Moslems do not eat pork or other products derived from hogs, they are not extensively raised. Chickens are kept mainly for eggs. Much more expensive than beef or mutton, poultry meat is only an occasional delicacy.

AGRICULTURAL POLICY

Policy Goals

Pakistan's principal agricultural production policy goals are: attainment of self sufficiency in the output of food grains for the rapidly growing population and expanded outturn of raw materials for the growing needs of domestic industry and for export. Specific goals and the investment of resources required to achieve these goals are spelled out in detail in the country's Second Five Year Plan for economic development, in which agriculture is given a high priority (tables 9 and 10). This Plan, which went into operation in July 1960, called for increased production of food grains through use of improved seeds, more fertilizer, expanded acreage, and more mechanization. Incentives offered to farmers under the present Plan include subsidized distribution of fertilizers, guaranteed prices and market outlets for some commodities, establishment of agricultural industries such as those for producing feed concentrates or processing dairy products and poultry, and improved marketing system, and more adequate production credit.

Table 9.--Pakistan: Second Five Year Plan agricultural production targets, 1964/65

Major crops	Estimated output in base period 1/			Planned output (1964/65)		
	East Pakistan	West Pakistan	Total	East Pakistan	West Pakistan	Total
	1,000 metric tons					
Foodgrains	7,494	5,907	13,401	8,892	7,284	16,176
Rice, milled	7,453	1,022	8,475	8,743	1,584	10,327
Wheat	24	3,738	3,762	131	4,267	4,398
Corn	2	476	478	3	690	693
Others	15	671	686	15	743	758
Fiber crops						
Jute	1,088	---	1,088	1,324	---	1,324
Cotton	3	293	296	3	404	407
Miscellaneous						
Gram and other pulses	270	664	934	279	762	1,041
Fruit and vegetables	3,064	1,364	4,428	3,348	1,629	4,977
Oilseeds (including cottonseeds)	124	826	950	180	1,070	1,250
Sugarcane	3,902	11,776	15,678	5,548	15,586	21,134
Tea	24.6	---	24.6	28.9	---	28.9
Tobacco	42.2	59.0	101.2	48.1	67.4	115.5

1/ Base periods differ for different crops. In most cases they are averages of production in a recent 3- to 5-year period.

Second Five Year Plan 1960-65, Government of Pakistan, Karachi, 1961.

Table 10.--Pakistan: Comparison of investment during First and Second Five Year Plans

Sector	First Plan 1955-60 actual investment	Second Plan 1960-65 proposed investment	Increase
	Million dollars 1/	Million dollars 1/	Percent
Industry	861	1,285	49
Water and power	483	922	91
Transport and communications	479	850	77
Agriculture	302	718	138
Housing and refugee settlement	542	716	32
Education and training	86	221	157
Health	29	88	203
Manpower and social welfare	10	29	180
Total	2,792	4,829	73

1/ 1960/61 prices.

Government of Pakistan, Planning Commission, The Second Five Year Plan (1960-65), Including Revised Estimates--November 1961.

Foreign Aid

To meet the foreign exchange costs of agricultural and other economic development under the Five Year Plan, Pakistan's policy is to supplement its limited foreign exchange earnings by seeking foreign aid. In 1954/55 such aid constituted 30 percent of the Central Government's budget, in 1958/59, 36.8 percent, and in 1962/63, 41.8 percent. Since the inception of the Colombo Plan in 1950, Pakistan has received financial and technical assistance from other member governments. Foreign aid has been received principally from the United States but also from many other countries including Australia, Canada, France, West Germany, Japan, New Zealand, Sweden, the United Kingdom, the USSR, and Yugoslavia. In addition, aid has been forthcoming from the International Bank for Reconstruction and Development (IBRD), the International Development Association (IDA), the International Finance Corporation, the United Nations and its specialized agencies, and the Ford Foundation.

In 1960, at Pakistan's request the IBRD formed an Aid-to-Pakistan Consortium of countries, currently comprised of Belgium, Canada, France, West Germany, Italy, Japan, Netherlands, United Kingdom, United States, and the IBRD and the IDA. The total amount of aid by members for the first 4 years of the Second Plan amounted to $1.8 billion. In addition, foreign commitments of $640 million have been made to the Indus Basin Development Fund.

Most of the U.S. aid to Pakistan's economic development is in the form of grants or loans on easy payment terms. Of the total $1.8 billion for the first 4 years of the Second Five Year

Plan, the U.S. share was slightly over 50 percent, followed by the IBRD and the IDA combined, accounting for 20 percent, and then by West Germany, Japan, and the United Kingdom. The United States also contributed $247 million, plus a rupee contribution equivalent to $235 million, to the total of $640 million contributed from non-Pakistan non-India sources to the Indus Basin Development Fund.

In addition to the above, the United States has committed $1 billion through sales of U.S. surplus agricultural commodities under P.L. 480.

Internal Market and Price Regulation

Prices for a gradually increasing number of farm products are fixed by the Government at levels intended to serve as floor prices and to encourage production. The main crops in this scheme are rice and wheat, but fixed prices are also established for sugarcane delivered at the factory. In practice these fixed prices, called ''procurement prices,'' are minimum prices. For the past several years the Government has bought little grain at these prices because they were invariably lower than prices in the open market. However, all surplus West Pakistan rice is purchased by the Government on a fixed price, monopoly basis. This rice is alloted for export or shipment to East Pakistan.

Jute and jute manufactures are Pakistan's chief foreign exchange earners. Before 1960 a number of jute controls were in force to encourage exports and to insure reasonable prices to growers. These included acreage controls, minimum export prices, and guaranteed prices. The acreage allotment system was abolished in 1960, and uncontrolled production led to larger carryover stocks and a steep fall in prices. A Government purchase program was not substantial enough to be effective. The acreage allotment system has been reintroduced to balance production with demand.

The Government maintains a monopoly only on rice; but sets requirements with respect to percentage mixtures of imported and domestic wheat. These apply only to the big roller mills and vary depending on supply. The usual required ratio for milling is 80 percent imported wheat and 20 percent domestic wheat. An embargo has been placed on the export of tea to ensure adequate domestic supplies.

Pakistan has no direct farm production subsidies and fertilizer is the only farm requisite which is directly subsidized. The Government has a fixed price for each type of fertilizer, whether produced locally or imported. In general, the subsidy amounts to at least 50 percent of the cost.

External Trade Policy

By means of licenses and the allocation of foreign exchange, Pakistan controls both the level and the sources of imports. Wheat and rice may be imported only by the Government, but domestic distribution takes place through private trade. A foreign exchange retention plan, designed to encourage exports, allows exporters to retain a small portion of foreign exchange earned from the export of certain commodities. This exchange, which is transferable (usually at a premium), may be used to import any of a large number of authorized commodities. White sugar may be imported only with exchange earned in this manner. Export commodities included in this retention plan are rice and manufactures of cotton and jute.

Pakistan has bilateral trade agreements with 24 countries of the Free World and the Communist bloc. Most agreements are automatically extended from year to year. Since Pakistan's major exports are raw jute and raw cotton, the Government has used these commodities in barter for specific imports from some countries.

Pakistan trades with countries of both the East and West, but traditionally trade has been oriented toward the Free World. Trade with the Communist countries of Europe is minor while that with Communist China is somewhat larger. Since development of the EEC, Pakistan feels that her export market to the member countries will be greatly reduced; therefore, she is striving to increase her trade with other countries.

Research and Education

The promotion of agricultural research and education are basic policies of the Government of Pakistan and the provincial governments. To coordinate research on important problems and on the major commercial crops, the Central Government has set up the following agencies: the Food and Agricultural Council of Pakistan, the Pakistan Central Cotton Committee, the Pakistan Central Jute Committee, and the Tea Board. These agencies finance research schemes, scrutinize their implementation, and publish results, but the actual research is mainly carried out by the provincial departments of agriculture in the research stations at the agricultural colleges. The Jute Committee and Tea Board have their own field research stations.

In addition to the provincial agricultural colleges, there are 3 research institutes for animal husbandry under the Central Ministry of Agriculture--at Peshawar (West Pakistan), Comilla (East Pakistan), and Karachi (West Pakistan).

At the time of independence (1947) there were only 3 universities in the country--University of the Punjab, University of Dacca, and University of the Sind. Since then, 3 new universities have been established: the University of Peshawar in 1950, Karachi University in 1951, and Rajshahi University in East Pakistan, also in 1951.

Credit

Greatly expanded farm credit will be necessary to achieve Pakistan's agricultural production goals, and the policy of the Government is to promote such credit through cooperative societies and otherwise. Nevertheless, lack of an adequate credit system is one of the major problems facing the Pakistani farmer. In general, money is difficult to borrow and interest rates, quite high.

In 1960 the Central Statistical Office conducted a sample survey which shows that in Pakistan most cultivators borrowed money during the preceding year. The loans were from the following sources:

	Percentage distribution of cultivators' loans--	
	East Pakistan	West Pakistan
	Percent	Percent
Friends and relatives	73.3	67.3
Landlord-employer	15.1	12.0

Percentage distribution of cultivators' loans--con.

	East Pakistan	West Pakistan
	Percent	Percent
Shopkeepers	4.1	0.9
Cooperative societies	0.8	0.8
Agricultural banks	0.9	0.9
Commission agents	1.6	0.2
Others	0.1	6.6
No response to source	4.1	11.3
	100.0	100.0

The money was borrowed for the following uses:

Percentage distribution of money borrowed--

	East Pakistan	West Pakistan
	Percent	Percent
Purchase of seeds	5.2	2.6
Tools and implements	0.8	1.1
Fertilizer	1.1	0.4
Livestock (purchases, health, fodder)	35.4	16.1
Construction of storage	5.6	1.4
Land development	6.0	12.3
Household expenditure	45.9	66.1
	100.0	100.0

The above tabulations indicate that, despite government encouragement, cooperative credit societies still play only a minor role in the farm credit picture. The latest available data indicate that there are about 30,000 cooperatives in the country with a total membership of around 3.5 million. Most of these are small credit societies.

National Agricultural Development Corporations

In July 1959 the Government of Pakistan established a Food and Agricultural Commission, which made a comprehensive study of Pakistan's agricultural structure and, in November 1960, rendered a report. The Commission pointed to "5 first" techniques for increasing agricultural production: (1) Improved seed, (2) fertilizers, (3) plant protection, (4) improved cultivation techniques, and (5) short- and medium-term credit. The Commission's chief concern was the means for promoting the adoption of these techniques by Pakistan's farmers. To accomplish this, they recommended establishment of a semi-autonomous Agricultural Development Corporation in each Province.

In late 1961, these corporations were promulgated by the Government of Pakistan, with very broad powers and functions. Their principal operations are divided into 2 main parts: (1) The supply side--charged with production, procurement, transportation, and distribution of improved seeds, fertilizers, plant protection equipment, pesticides and agricultural machinery, (2) the field ''wing''-- charged with supervision of agricultural extension work, management of land and water utilization, and the extension of supervised farm credit in designated areas.

The primary task of the field wings is to promote the intensive and coordinated use of the ''5 firsts,'' and a second task is to solve special and more complicated problems such as land reclamation, range management, soil conservation, and the establishment of cooperatives.

FOREIGN TRADE IN FARM PRODUCTS

Exports and Imports

Pakistan's foreign trade is regulated by means of licenses, quotas, and tariffs. Export duties on jute and cotton have been used for revenue purposes, but they are being gradually reduced to keep these commodities competitive in world markets. Vegetable oils imported under P.L. 480 have been exempt from duty since 1957. Import duties and sales taxes were also removed from nonfat dry milk, ghee, egg powder, and poultry in 1962. The action opened the way for larger importation and consumption of these commodities.

Export trade is predominantly in agricultural commodities or manufactures (table 11). Jute and cotton and their related products make up the bulk of exports. In FY 1962/63 agricultural commodities accounted for 70 percent of all exports.

Agricultural commodities accounted for 19 percent of all imports in FY 1962/63 (table 12). The major item was wheat, followed by animal and vegetable oils and fats. The United States is the principal supplier of wheat, which is provided under P.L. 480.

During the period FY 1952/53 to FY 1955/56, Pakistan ran a surplus of exports over imports. However, since then there has been a negative balance ranging from a deficit of $53.1 million in FY 1958/59 to $374.9 million in FY 1962/63. These large deficits reflect the import of materials to carry out the country's development plans. The aid Pakistan has received from other countries has helped conserve its foreign exchange balances during these trade deficit years.

In 1962/63 the United States ranked first as Pakistan's source of imports and was the third ranking country as an export outlet (table 13). The United Kingdom consistently leads all other countries as a destination for exports. India and Japan are Pakistan's leading trade partners in Asia.

Trade with the United States

Agricultural commodities accounted for 49, 32, and 43 percent of all U.S. exports to Pakistan for calendar years 1961, 1962, and 1963, respectively (table 14). The major commodity supplied

Table 11.--Pakistan: Exports of major agricultural commodities, FY 1960/61 to FY 1962/63 (July-June)

Commodity	1960/61	1961/62	1962/63
	1,000 dollars		
Unmanufactured			
Dairy products	334	341	731
Rice, milled	10,286	18,165	31,453
Fruits and vegetables	1,017	1,209	1,158
Sugar and preparations	370	78	666
Tea	230	4,515	1,341
Feed stuff	1,792	2,202	4,411
Tobacco	15	13	50
Hides and skins	11,873	13,290	10,929
Cotton	32,328	31,420	60,836
Jute	178,100	178,406	166,501
Wool and animal hair	16,000	15,945	16,074
Other 1/	4,903	5,288	6,046
Total	257,248	270,872	300,196
Manufactured			
Jute 2/	65,899	67,556	64,374
Cotton 3/	24,829	8,627	13,916
Other	29,892	40,627	48,595
Total	120,620	116,810	126,885
Total all exports	377,868	387,682	427,081
	Percent		
Unmanufactured as percentage of total	68	70	70

1/ Includes live animals for food, meat and preparations, cereals and preparations, animal and vegetable crude materials, and animal and vegetable oils.
2/ Includes jute bags, fabrics, rope and twine, and yarn.
3/ Includes cotton twist and fabrics.

Government of Pakistan, Central Statistical Office.

for these years was wheat. Most U.S. agricultural exports to Pakistan go under Title I, P.L. 480. A historical summary of Title I, P.L. 480 shipments to Pakistan for the period 1956/63 is provided in table 15. Agricultural commodities programmed for Pakistan from July 1, 1954, to June 30, 1964, under P.L. 480, Titles I and II, total slightly over $1 billion.

Agricultural imports accounted for 63, 59, and 50 percent of all commodities imported into the United States from Pakistan in 1961, 1962, and 1963, respectively. The value of agricultural imports for those years was quite steady totaling $22.9 million in 1961, $24.3 million in 1962, and $22.3 million in 1963. The major import items were wool and jute.

Table 12.--Pakistan: Import of major agricultural commodities, FY 1960/61 to FY 1962/63 (July-June)

Commodity	1960/61	1961/62	1962/63
		1,000 dollars	
Agricultural			
Wheat	76,700	58,810	67,356
Rice	38,135	6,990	12,249
Corn	---	---	889
Fruit and vegetables	7,446	3,744	3,700
Sugar	243	6,170	9,109
Spices	3,740	3,135	2,600
Cotton, raw	1,638	3,862	4,968
Tobacco, unmanufactured	654	1,837	2,501
Oilseeds, nuts and kernels	642	708	784
Animal and vegetable oils and fats	21,621	21,315	43,683
Other 1/	5,444	3,859	6,216
Total	156,263	110,430	154,055
Nonagricultural	513,138	542,481	647,887
Total	669,401	652,911	801,942
		Percent	
Agricultural imports as percentage of total	23	17	19

1/ Includes meat and meat preparations, dairy products, coffee, tea, cocoa, miscellaneous food preparations, and cereal and cereal preparations (excepting wheat, rice, and corn).

Government of Pakistan, Central Statistical Office

Table 13.--Pakistan: Imports and exports by selected countries and regions, FY 1960/61 to FY 1962/63 (July-June)

Country and region	FY 1960/61		FY 1961/62		FY 1962/63	
	Import	Export	Import	Export	Import	Export
			1,000 dollars			
United Kingdom	124,970	58,958	133,156	61,840	124,011	65,592
United States	160,155	34,577	201,339	36,786	321,066	37,141
India	27,246	22,041	22,490	31,818	22,117	40,807
Japan	52,851	25,835	51,886	22,815	54,128	34,826
Continental O.E.E.C.	149,059	78,365	134,189	95,191	147,319	94,458
USSR and Eastern Europe	11,608	17,029	9,914	19,626	13,645	13,836
Other	143,512	141,062	99,939	119,044	119,716	140,421
Total	669,401	377,867	652,913	387,120	801,942	427,081

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Table 14.--United States: Trade with Pakistan, 1961-63

Commodity	1961		1962		1963	
	Quantity	Value	Quantity	Value	Quantity	Value
	1,000 metric tons	1,000 dollars	1,000 metric tons	1,000 dollars	1,000 metric tons	1,000 dollars
Exports						
Agricultural						
Wheat 1/	1,119	69,586	687	45,712	1,882	120,499
Rice, milled	50	6,626	0	0	0	0
Barley	0	0	20	1,624	0	0
Corn	0	0	26	1,304	3	160
Cotton, excluding linters	1	1,492	8	7,335	2	2,594
Soybean oil 2/	22	6,465	59	17,828	94	29,914
Cottonseed oil, ref.	15	4,482	22	7,221	13	3,749
Nonfat dry milk	1	273	1	173	10	2,270
Tallow, inedible	15	2,707	24	4,404	26	4,181
Tobacco, flue-cured	1	1,797	1	1,928	1	2,235
Other agricultural 3/	---	2,349	---	3,470	---	4,252
Total	---	95,777	---	91,000	---	169,854
Nonagricultural	---	99,464	---	193,569	---	222,955
All commodities	---	195,241	---	284,569	---	392,809
	Percent					
Agricultural as percentage of total	---	49	---	32	---	43
	1,000 metric tons	1,000 dollars	1,000 metric tons	1,000 dollars	1,000 metric tons	1,000 dollars
Imports						
Agricultural						
Wool, unmanufactured free	9	10,235	7	7,739	6	7,370
Buffalo hides	0	0	4/	443	4/	325
Goat and kid skins	3	3,637	2	2,845	2	2,550
Hair, unmanufactured animal	1	543	2	716	1	754
Cotton, excluding linters	2	1,381	2	984	1	440
Jute and jute butts	19	6,828	55	10,958	64	10,512
Other agricultural	---	286	---	562	---	356
Total	---	22,910	---	24,247	---	22,307
Nonagricultural	---	13,705	---	17,142	---	21,946
All commodities	---	36,615	---	41,389	---	44,253
	Percent					
Agricultural as percentage of total	---	63	---	59	---	50

1/ Includes wheat equivalent of flour. 2/ Refined and unrefined. 3/ Includes food for relief or charity. 4/ Less than 500 metric tons.

Economic Research Service, U.S. Department of Agriculture. U.S. Foreign Agricultural Trade by Countries, Calendar years 1961, 1962, and 1963.

Table 15.--United States: Title I, P.L. 480 shipments to Pakistan, by commodities and calendar years, 1956-63

Commodity	1956	1957	1958	1959	1960	1961	1962	1963
	1,000 metric tons							
Wheat	176.65	323.35	646.36	581.78	1,186.21	1,138.47	674.10	1,798.82
Wheat flour	---	---	3.03	4.79	12.67	12.97	19.83	6.09
Rice	191.77	126.37	100.09	57.00	85.52	48.52	---	---
Bulgar	---	---	---	---	---	1.01	---	---
Corn	---	---	---	---	---	---	19.28	---
Tobacco	1.10	0.79	---	---	0.48	0.95	0.88	1.19
Ghee	.88	1.09	1.86	---	---	---	---	---
NFDM	---	---	0.29	0.52	1.99	---	1.13	6.14
Cottonseed oil	---	5.62	0.27	16.34	15.57	14.23	20.16	11.42
Soybean oil	---	0.34	---	11.32	12.63	22.45	58.89	96.63
Linseed oil	0.31	0.09	---	---	---	---	---	---
Tallow	---	---	1.14	---	---	---	19.88	23.68
Cotton 1/	27.11	9.29	1.83	2.91	1.22	0.98	8.69	1.99

1/ Includes cotton sent to third country for processing.

Foreign Agricultural Service, U.S. Department of Agriculture.

OUTLOOK

The drive to achieve rapid development of Pakistan's economy is expected to continue to dominate government policy. Economic goals and the requirements for achieving these are incorporated in the country's Five Year Plans. The current plan, the country's second, terminates in June 1965, but will be followed immediately by the Third Five Year Plan, extending to June 1970. The objective of these plans is to achieve for all the people as high a standard of living as possible with the resources available by means of: equal distribution of wealth; education available for all according to their talent; control over disease; adequate facilities for transportation and communication so that the nation may be unified economically and socially; and encouragement of the national culture in literature, art, and science.

The highest priority is attached to increasing agricultural production. It is planned to raise food grain production to a level of national self sufficiency. Another objective is to increase production of other agricultural commodities sufficiently to improve the diet of the vast majority of the people who are overdependent on food grains for their daily diet. Thus substantial expansion in production of fruits and vegetables, pulses, fats and oils, sugar, and livestock products is planned. Also it is planned to increase the outturn of important agricultural, industrial, and export crops, particularly cotton and jute.

Overall economic growth rates for Pakistan are fairly encouraging. Gains in gross national product are well ahead of population growth. Industry is growing much more rapidly than agriculture. The industrial production index increased more than 50 percent over the past 5 years.

Optimism is being expressed in some quarters over the outlook for rapidly increasing agricultural production in Pakistan. This view is based in part on fairly substantial gains in the production of rice and a few other commodities in the last year or so. The rate of growth in agricultural production over the decade 1953-63 was ahead of population growth, but only by a narrow margin of 0.7 percent. Much more needs to be accomplished to put agricultural production safely ahead of the population growth rate during the period of the Third Five-Year Plan.

Despite limited prospects for adding to the cultivated land base, Pakistan potentially has the resources to achieve a rather rapid rate of growth in agricultural production by raising the very low per acre yield. Government plans are based on the possibility of thus achieving almost complete self sufficiency in food over the next decade. On the other hand, past achievements in Pakistan and in other developing countries throughout the world indicate that agricultural production is unlikely to expand at the desired rate, particularly in view of the explosive population growth rate. Population is estimated to be increasing at the rate of 2.3 percent per annum.

Indications are that the need to import food grains will be greater in 1975 than during recent years, particularly as some dietary improvement is likely. It is not expected that Pakistan will be earning sufficient foreign exchange to purchase such a volume of food grains commercially while at the same time financing other essential imports. Therefore, the level of imports will depend in part upon the availability of grains and other farm products on terms such as P.L. 480.

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